Mini DVM HVAC Guide Specifications
Variable Refrigerant Flow, Heat Pump Models with Multiple Indoor Units.

Size Range:

3 AND 4 TONS NOMINAL

Samsung Electronics MINI DVM Model Numbers:

RD040MHXCA
RD050MHXCA

Part 1 – General

1.1 SYSTEM DESCRIPTION

The variable capacity, heat pump air conditioning system shall be a Samsung Electronics Mini DVM (Variable Refrigerant Flow) System. The MINI DVM heat pump system shall be a single outdoor unit system.

The MINI DVM system shall consist of RD0*0MHXCA outdoor unit, multiple indoor units (AVX**H***CE or ND0*2CHXCB models), and DVM Control Network Solution (Control systems). The MINI DVM outdoor unit shall be a Horizontal discharge, 208/230 volt, single phase unit. The MINI DVM outdoor unit model numbers and the associated number of connectable indoor units per RD0*0MHXCA outdoor unit is indicated in the following table. Each indoor unit or group of indoor units shall be independently controlled.

Model Number	Connectable Number of Indoor Units
RD040MHXCA	6
RD050MHXCA	8

A. Piping
1. Piping to multiple indoor units requires additional piping components. Samsung Y-joint fittings or header fittings must be used to branch the main refrigerant lines to indoor units and components.

1.2 QUALITY ASSURANCE

a. The units shall be listed by Electrical Laboratories (ETL) and bear the ETL label.
b. All wiring shall be in accordance with the National Electrical Code (N.E.C.).
c. The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
d. A full charge of R-410A for the condensing unit only shall be provided in the condensing unit. Additional refrigerant is required based on diameters and lengths of system liquid refrigerant lines.

2.01 WARRANTY

1. **LIMITED WARRANTY** – SAMSUNG Air Conditioning / SAMSUNG ELECTRONICS warrants to the original end-user ("you") of SAMSUNG's DVM Plus II & MINI DVM System Heat Pumps & Air Conditioners the "Product" as follows:
(a) If within Six (6) years after initial installation of the product, any compressor in the Product shall prove to be defective in material or workmanship, SAMSUNG will replace the defective compressor at no charge.
(b) If within One (1) year after initial installation of the Product, the functional parts of the Product shall prove to be defective in material or workmanship SAMSUNG will at SAMSUNG's option, repair or replace the defective part at no charge for the part.
(c) If you are unable to prove the date of initial installation of the Product to the satisfaction of SAMSUNG, the warranty period shall be deemed to commence on the 30th day after the date of manufacture of the Product as determined by the unit serial #.
(d) The warranty on the replacement compressor and other replacement parts will be limited to the unexpired term of the original warranty for the Product.
2. **CONDITIONS** – The warranty applies only if the Product: (a) was initially installed within the continental United States, Canada or Hawaii and remains at the site of its original installation; and
(b) was installed by a factory trained or authorized HVAC contractor and operated in accordance with SAMSUNG'S written design layout, installation instructions, all applicable local installation and building codes, and good industry practices;
3. **THIS WARRANTY DOES NOT INCLUDE**: (a) labor charges for servicing, repairing, removing or installing defective or replacement parts or the complete Product. (b) shipping, delivery, handling or administrative charges for returning the claimed defective Product or part or for forwarding the replacement part to you; or (c) any necessary or incidental costs for any materials or permits required for repairing a defective part of installing a replacement part. Such costs may be covered by a separate warranty provided by the installer. This warranty also does not cover costs for parts (such as filters or belts) incurred in connection with normal maintenance or owner-required maintenance of the Product. Consult the instructions enclosed with the Product for information regarding recommended maintenance.
4. **THIS WARRANTY DOES NOT COVER** damages caused by: (a) accident, abuse, negligence or misuse; (b) operating the Product in a corrosive atmosphere containing chlorine, fluorine, or any other damaging chemicals; (c) modification, alteration, repair service by any person other than a trained authorized SAMSUNG dealer or trained HVAC contractor; (d) improper matching on application of the Product or its components; (e) failure to provide proper maintenance or service to the Product according to manufacturer's instructions; (f) installation or operation of the Product in a manner contrary to manufacturer's instructions; (g) fluctuations in electrical power; or (h) lightning, flood, fire or other acts of God.
5. **TO OBTAIN WARRANTY PERFORMANCE** or replacement parts you must notify an authorized SAMSUNG dealer or your HVAC contractor in writing of any claimed defect within the applicable warranty period. Any defective part to be replaced must be made available to SAMSUNG in exchange for the replacement part. To obtain the name of your nearest authorized SAMSUNG dealer or information on warranty performance, you may contact Technical Service at QUIETSIDE, 8750 Pioneer Blvd, Santa Fe Springs, CA 90670 or call 888-699-6067.

6. Any and all implied warranties, including without limitation, any warranties of merchantability and fitness for a particular purpose, are limited in duration to the lessor of: (a) the applicable warranty period specified in paragraph 1 above, or (b) the warranty period provided by law for such implied warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.
7. In no event shall SAMSUNG be liable to the owner of the Product or any other person for any special incidental or consequential damages in connection with the Product, whether arising out of breach of warranty, breach of contract, or otherwise. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.
8. This warranty contains the sole express warranty made by SAMSUNG in connection with the Product. No SAMSUNG dealer or contractor or other person is authorized to make any other warranties or representations on behalf of SAMSUNG in connection with the Product.
9. This warranty gives you specific rights, and you may also have other rights which vary from state or province to state or province.

Part 3 – Outdoor Unit Performance

3.01 The MINI DVM outdoor unit shall perform as indicated below (nominal capacity):

Outdoor Units	Cooling Capacity (Btu/h)*	Power Input (Watts)
RD040MHXCA	38,000	3000
RD050MHXCA	48,000	4500

Outdoor Units	Heating Capacity (Btu/h)*	Power Input (Watts)
RD040MHXCA	42,000	3400
RD050MHXCA	54,000	4200

*Will vary based upon indoor unit model type.

Part 4 – Products

4.01 MXD (ELECTRONIC EXPANSION VALVE) KITS (MULTI ZONE) FOR MINI DVM HP OUTDOOR UNITS

A. General:

This device allows a liquid and suction pipe from the condenser to connect and meter refrigerant to 2 or 3 wall or under-ceiling units. The MXD units shall be equipped with a circuit board that interfaces to the DVM Control Network Solution (Control systems) and shall perform all functions necessary for operation. The unit shall have a galvanized steel finish. The MXD EEV kit shall be completely factory assembled, piped and wired. Each unit shall be run tested at the factory. This unit shall be mounted indoors. Only compatible with MINI DVM heat pump systems. The length of

pipe between an MXD EEV kit and a single indoor unit cannot exceed 65 actual feet. The MXD EEV kit selection is based on the quantity of units and capacity of each according to the table below.

EEV Kit Model Number	Number of Connectable Indoor Units	Connectable Capacity (Btu/h)
MXD-A13K116A	2	1 X ≤ 12,000 1 x 18,000 – 24,000
MXD-A13K200A	2	2 X ≤ 12,000
MXD-A16K200A	2	2 X 18,000 – 24,000
MXD-A22K200A	2	2 X > 24,000
MXD-A13K216A	3	2. X ≤ 12,000 1 X 18,000 – 24,000
MXD-A13K300A	3	3 X ≤ 12,000
MXD-A16K213A	3	1 X ≤ 12,000 2 X 18,000 – 24,000
MXD-A16K300A	3	3 X18,000- 24,000

B. MXD EEV Kit Cabinet:
   1. The casing shall be fabricated of galvanized steel.
   2. Each cabinet shall house 2 or 3 (depending on model) electronic expansion valves and a common suction connection.

C. Refrigerant
   1. R410A refrigerant shall be required for MXD EEV kits in conjunction with R410A, RD0*0MHXCA outdoor unit systems.

D. Integral Drain Pan:
   1. An integral condensate pan and drain shall be provided. Drain termination is required upon installation with an appropriate termination.

E. Electrical:
   1. The unit electrical power shall be 208/230 volts, 1 phase, 60 hertz.
   2. The unit shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253V (230V/60Hz).
   3. The MXD EEV kit shall be controlled by integral microprocessors.
   4. The control circuit between the indoor units, MXD EEV kit and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two conductor, 16 AWG, shielded cable to provide total integration of the system. Operation is based on communication on this main COM1 line.

4.02 MEV (ELECTRONIC EXPANSION VALVE) KIT (SINGLE ZONE) FOR MINI DVM OUTDOOR UNITS

A. General:

The MEV-A1*SA device is a single zone electronic expansion valve for Samsung DVM wall-mounted units and under-ceiling units. Compatible with MINI DVM heat pump systems (RD0*0MHXCA) and MINI DVM Heat Recovery Systems (RD0*0MHXCA). The MEV-A1*SA EEV installs inline on the liquid line for a single unit. It must be located nearby the unit (no more than 10 feet of pipe between the MEV-A*SA and the connected indoor unit. The appropriate expansion valve should be selected based on the capacity of the connected unit per the table below.

EEV Kit Model Number	Connectable Capacity (Btu/h)
MEV-A13SA	≤ 12,000
MEV-A16SA	18,000 – 24,000

B. Cabinet:
1. The casing shall be fabricated of galvanized steel and plastic

C. Refrigerant
1. For R410A systems only.

D. Electrical:
1. The MEV-A1*SA single zone EEV is powered and controlled directly from the indoor unit that it is metering refrigerant to via included wire harness.

4.03 MINI DVM HP OUTDOOR UNIT

A. General

The MINI DVM HP outdoor unit shall be specifically used with SAMSUNG MINI DVM Heat pump components. The MINI DVM outdoor unit shall consist of the RD0*0MHXCA outdoor unit, indoor units (AVX**H***CE or ND0*2CHXCB models), and DVM Control Network Solution (Control systems). The RD0*0MHXCA outdoor units shall be equipped with multiple circuit boards that interface to the DVM Control Network Solution (Control systems) and shall perform all functions necessary for operation. The outdoor unit shall have a powder coated finish. The outdoor unit shall be completely factory assembled, piped and wired. Each unit shall be run tested at the factory.

1. The sum of connected capacity of all indoor units shall range from 50% to 130% of outdoor rated capacity.
2. Outdoor unit shall have a sound rating no higher than 53 dB(A).
3. Both refrigerant lines from the outdoor unit to indoor units shall be insulated.
4. The outdoor unit shall have an accumulator.
5. The outdoor unit shall have a high pressure safety switch, fuse, over-current protection and crank case heater.
6. The outdoor unit shall have the ability to operate with a maximum height difference of 98 feet with the outdoor unit installed higher than the indoor units or 82 feet with the condensers installed lower than the indoor units and have total refrigerant tubing length of 656 feet. The greatest length is not to exceed 278 feet between outdoor unit and the farthest indoor unit.

7. The outdoor unit shall be capable of operating in heating at -4°F ambient temperature without additional low ambient controls.
8. The outdoor unit shall have a high efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained.
9. The outdoor unit shall have a Turbo Intercooler to subcool liquid refrigerant further to increase capacity and performance with long pipe lengths.

B. Unit Cabinet
1. The chassis shall be fabricated of galvanized steel, bonderized and finished with a powder coated baked enamel.

C. Fan
1. The RD0*0MHXCA outdoor unit shall be furnished with one direct drive, variable speed propeller type fan.
2. The fan motor shall be mounted for quiet operation.
3. The outdoor unit shall have horizontal discharge airflow.

D. Refrigerant
1. R410A refrigerant shall be required for RD0*0MHXCA series outdoor unit systems.
2. Additional refrigerant is required. Amount is based on installed refrigerant pipe diameters and lengths.

E. Coil
1. The outdoor coil shall be of nonferrous construction with lanced or corrugated plate fins on copper tubing.
2. The coil shall be protected with an integral metal guard.

F. Compressor
1. Refrigerant flow from the outdoor unit shall be controlled by means of capacity modulation capable inverter driven, twin BLDC rotary compressor.
2. A crankcase heater shall be factory mounted on the compressor.
3. The outdoor unit compressor shall have a variable modulation technology to modulate capacity. The capacity shall be completely variable down to ≈17% of rated capacity.
4. The compressor shall be equipped with an internal thermal overload.
5. The compressor shall be mounted to avoid the transmission of vibration.

G. Electrical
1. The outdoor unit electrical power shall be 208/230 volts, 1 phase, 60 hertz.
2. The unit shall be capable of satisfactory operation within voltage limitations of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz)
3. The outdoor unit shall be controlled by integral microprocessors.
4. The control circuit between the indoor units and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, 16 AWG, shielded, two-core cable to provide total integration of the system.

4.04 AVXWNH0**CE (WALL-MOUNTED) INDOOR UNIT (NEO FORTE)

A. General:

The AVXWNH0**CE shall be wall-mounted indoor unit section with a slim silhouette and must be installed with an optional modulating linear expansion valve or two or three rooms EEV (Electronic Expansion Valve) kits. The AVXWNH0**CE shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The AVXWNH0**CE shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be AVXWNH020CE / AVXWNH032CE / AVXWNH040CE / AVXWNH052CE / AVXWNH060CE / AVXWNH072CE.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

Model Number	Btu/h Cooling*	BTU/h Heating*
AVXWNH020CE	6,000	7,000
AVXWNH032CE	9,500	10,500
AVXWNH040CE	12,000	13,500
AVXWNH052CE	18,000	20,000
AVXWNH060CE	20,000	23,000
AVXWNH072CE	24,000	24,000

*Nominal capacity

B. Indoor Unit

The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board and fan motor. An optional electronic modulating linear expansion valves is available for accessories. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory.

C. Unit Cabinet

1. The casing shall have a gloss white finish.
2. Multi directional drain and refrigerant piping offering four (4) directions for refrigerant piping and four (4) directions for draining shall be standard.
3. There shall be a separate galvanized steel mounting plate which secures the unit firmly to the wall.

D. Fan

1. The indoor fan assembly shall be a cross-flow fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.

3. A manual adjustable guide vane shall be provided with the ability to change the airflow from side to side (left to right).
4. A motorized air sweep louver shall provide an automatic change in airflow by directing the air up and down to provide uniform air distribution.
5. The indoor fan shall consist of various speeds, as indicated in below table.

Model Number	Fan Speed Setting
AVXWNH020CE AVXWNH032CE AVXWNH040CE AVXWNH052CE AVXWNH060CE AVXWNH072CE	(UL)-Low – Mid– High

E. Filter:
1. Return air shall be filtered by means of an easily removable, washable filter (2).
2. Supplemental antibacterial and anti-odor filters are included.

F. Coil:
1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain shall be provided under the coil.
6. The coil fins are coated with hydrophilic paints.
7. Both refrigerant lines to the AVXWNH0**CE indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz)
3. The control circuit between the indoor units, MCU (Mode Change Unit) and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable to provide total integration of the system.

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.
2. This unit shall include a wireless controller and holder as standard.

4.05 AVXWVH0**CE (WALL-MOUNTED) INDOOR UNIT (VIVACE)

A. General :

The AVXWVH0**CE shall be wall-mounted indoor unit section with a slim silhouette and must be installed with an optional modulating linear expansion valve or two or

three rooms EEV (Electronic Expansion Valve) kits. The AVXWVH0**CE shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The AVXWVH0**CE shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be AVXWVH020CE / AVXWVH032CE / AVXWVH040CE / AVXWVH052CE / AVXWVH060CE.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

System Model Number	Btu/h Cooling	BTU/h Heating
AVXWVH020CE	6,000	7,000
AVXWVH032CE	9,500	10,500
AVXWVH040CE	12,000	13,500
AVXWVH052CE	18,000	20,000
AVXWVH060CE	20,000	23,000

B. Indoor Unit

The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board and fan motor. An optional electronic modulating linear expansion valves is available for accessories. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory.

C. Unit Cabinet:

1. The casing shall have a black and glass finish on the front panel, matte grey on the rest of the cabinet.
2. Multi directional drain and refrigerant piping offering four (4) directions for refrigerant piping and four (4) directions for draining shall be standard.
3. There shall be a separate galvanized steel mounting plate which secures the unit firmly to the wall.

D. Fan:

1. The indoor fan assembly shall be a cross-flow fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. A manual adjustable guide vane shall be provided with the ability to change the airflow from side to side (left to right).
4. A motorized air sweep louver shall provide an automatic change in airflow by directing the air up and down to provide uniform air distribution.
5. The indoor fan shall consist of various speeds, as indicated in below table.

Model Number	Fan Speed Setting
AVXWVH020CE AVXWVH032CE AVXWVH040CE AVXWVH052CE AVXWVH060CE	(UL)-Low – Mid– High

E. Filter:
1. Return air shall be filtered by means of an easily removable, washable filter (2).
2. Supplemental antibacterial and anti-odor filters are included.

F. Coil:
1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain shall be provided under the coil.
6. The coil fins are coated with hydrophilic paints.
7. Both refrigerant lines to the AVXWV***CE indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz)

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options
2. This unit shall include a wireless controller as standard.

4.06 ND0**CHXCB (UNDER CEILING/WALL) INDOOR UNIT

A. General:

The ND0**CHXCB shall be installed under ceiling or on wall. The ND0**CHXCB shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The ND0**CHXCB shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be ND052CHXCB and ND072CHXCB.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

System Model Number	BTU/h Cooling*	BTU/h Heating*
ND052CHXCB	18,000	20,000
ND072CHXCB	24,000	27,000

*Nominal capacity

B. Indoor Unit.
The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function. The unit shall have a single auto-swing louver. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory. Gravity drain as standard.

C. Unit Cabinet:
1. The cabinet shall be space-saving under-ceiling unit that can also be installed on a wall
2. The casing shall be UL94 V0
3. The casing shall have a white finish.
4. There shall be separate galvanized steel mounting hangers that will secure the unit firmly to the wall in wall-mounted applications

D. Fan:
1. The indoor fan assembly shall be a Sirocco fan (2) direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.
4. The auto air swing louver shall be capable of automatically swinging up and down for uniform air distribution.

E. Filter:
1. Return air shall be filtered by means of a long-life washable permanent filter (2).

F. Coil:
1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain outlet shall be provided under the coil (gravity drain)
6. The coil fins are coated with hydrophilic paints.
7. Both refrigerant lines to the ND0**CHXCB indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.

4.07 AVXC4H***CE (4-WAY CEILING CASSETTE WITH GRILLE) INDOOR UNIT

A. General:

The AVXC4H***CE shall be a four-way cassette style indoor unit that recesses into the ceiling with a ceiling grille (ordered separately, part number: P4SMA) and shall have a modulating linear expansion device. The AVXC4H***CE shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The AVXC4H***CE shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be AVXC4H052CE / AVXC4H072CE / AVXC4H100CE / AVXC4H110CE / AVXC4H145CE.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

System Model Number	BTU/h Cooling	BTU/h Heating
AVXC4H052CE	18,000	20,000
AVXC4H072CE	24,000	27,000
AVXC4H100CE	30,000	34,000
AVXC4H110CE	36,000	40,000
AVXC4H145CE	48,000	54,000

B. Indoor Unit.

The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory.

C. Unit Cabinet:
1. The cabinet shall be space-saving ceiling-recessed cassette.
2. Each corner portion of the panel cabinet is detachable, which gives easy access to adjust the height.
3. The cabinet shall have provisions for a field installed, filtered, outside air intake. A booster fan is necessary. A 208/230V AC relay terminal is available to control the booster fan (max 1A).

4. Branch ducting shall be allowed from cabinet, available on 2 sides to condition an adjacent space

D. Fan:
1. The indoor fan assembly shall be a turbo fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.
4. The auto air swing vanes (4) shall be capable of automatically swinging up and down for uniform air distribution.

E. Filter:
1. Return air shall be filtered by means of a long-life washable permanent filter.

F. Coil:
1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain shall be provided under the coil.
6. The coil fins are coated with hydrophilic paints.
7. The condensate lift mechanism shall be able to raise drain water 29 inches above the condensate pan with built in check valve and float switch.
8. Both refrigerant lines to the AVXC4H***CE indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.

4.08 AVXCMH0**CE (MINI 4-WAY CEILING CASSETTE WITH GRILLE) INDOOR UNIT

A. General:

The AVXCMH0**CE shall be a four-way cassette style indoor unit that recesses into the ceiling with a ceiling grille (part number: PMSMA, ordered separately) and shall have a modulating linear expansion device. The AVXCMH0**CE shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The AVXCMH0**CE shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be AVXCMH032CE / AVXCMH040CE / AVXCMH052CE / AVXCMH060CE.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for

the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

System Model Number	BTU/h Cooling	BTU/h Heating
AVXCMH032CE	9,500	10,500
AVXCMH040CE	12,000	13,500
AVXCMH052CE	18,000	20,000
AVXCMH060CE	20,000	23,000

B. Indoor Unit.

The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory.

C. Unit Cabinet:

1. The cabinet shall be space-saving ceiling-recessed cassette.
2. The cabinet panel shall have provisions for a field installed, filtered, outside air intake. A booster fan is necessary. A 208/230V AC relay terminal is available to control the booster fan (max 1A).
3. The compact cabinet size can be installed on one standard ceiling tile (24” x 24”)

D. Fan:

1. The indoor fan assembly shall be a turbo fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.
4. The auto air swing vanes (4) shall be capable of automatically swinging up and down for uniform air distribution.

E. Filter:

1. Return air shall be filtered by means of a long-life washable permanent filter.

F. Coil:

1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain outlet shall be provided under the coil.
6. The coil fins are coated with hydrophilic paints.
7. The condensate lift mechanism shall be able to raise drain water 29 inches above the condensate pan with float switch.
8. Both refrigerant lines to the AVXCMH0**CE indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.

4.09 AVXCSH0**CE (SLIM 1-WAY CEILING CASSETTE WITH GRILLE) INDOOR UNIT

A. General:

The AVXCSH0**CE shall be a one-way cassette style indoor unit that recesses into the ceiling with a ceiling grille (ordered separately, part number: PSSMA) and shall have a modulating linear expansion device. The AVXCSH0**CE shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The AVXCSH0**CE shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be AVXCSH040CE / AVXCSH023CE / AVXCSH032CE.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

System Model Number	BTU/h Cooling	BTU/h Heating
AVXCSH023CE	7,500	8,500
AVXCSH032CE	9,500	10,500
AVXCSH040CE	12,000	13,500

B. Indoor Unit.

The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory.

C. Unit Cabinet:
1. The cabinet shall be space-saving ceiling recessed.
2. The one-way grille shall be fixed to bottom of cabinet allowing for one-way airflow (PSSMA panel).

D. Fan:
1. The indoor fan shall be an assembly with one line-flow fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.

E. Filter:
1. Return air shall be filtered by means of a long-life washable permanent filter (2).

F. Coil:
1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain shall be provided under the coil.
6. The condensate lift mechanism shall be able to raise drain water 29 inches above the condensate pan with built in check valve and float switch.
7. The coil fins are coated with hydrophilic paints.
8. Both refrigerant lines to the AVXCSH0**CE indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.

4.12 AVXDSH***CE (CEILING-CONCEALED, SLIM, DUCTED) INDOOR UNIT

A. General:

The AVXDSH***CE shall be a ceiling-concealed ducted indoor fan coil design that mounts above the ceiling with a 2-position, field adjustable return and a fixed horizontal discharge supply and shall have a modulating linear expansion device. The AVXDSH***CE shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The AVXDSH***CE shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be AVXDSH020CE / AVXDSH032CE / AVXDSH040CE / AVXDSH052CE / AVXDSH072CE / AVXDSH100CE / AVXDSH110CE / AVXDSH145CE.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

System Model Number	Btu/h Cooling	Btu/h Heating
AVXDSH020CE	6,000	7,000
AVXDSH032CE	7,500	8,500
AVXDSH040CE	12,000	13,500
AVXDSH052CE	18,000	20,000
AVXDSH072CE	24,000	27,000
AVXDSH100CE	30,000	34,000
AVXDSH110CE	36,000	40,000
AVXDSH145CE	48,000	54,000

B. Indoor Unit.
The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory.

C. Unit Cabinet:
1. The unit shall be space saving, ceiling-concealed, ducted.
2. The cabinet shall be constructed of insulated galvanized steel.

D. Fan:
1. The indoor unit fan assembly shall be two or three Sirocco fans direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced and run on a motor with permanently lubricated bearings.
3. The indoor fan shall consist of various speeds, as indicated in below table.

Model Number	Fan Speed Setting
AVXDSH020CE AVXDSH032CE AVXDSH040CE AVXDSH052CE AVXDSH072CE AVXDSH100CE AVXDSH110CE AVXDSH145CE	Low – Mid – High

4. The indoor unit shall have a ducted air outlet and ducted return air system.
5. Standard external static pressure is 0.08” WC (min. 0”, max. 0.16”WC) for Slim Duct units up to 24,000 btu/h and 0.12” WC (min. 0”, max. 0.24”) for units 30,000 btu/h and larger.

6. The fan speed shall be adjustable by optional remote controller according to external static pressure.

E. Filter:
1. Return air shall be filtered by means of a standard factory installed return air filter on rear of unit.
2. Optional return connection through rear or bottom of unit with removal and replacement of return air conversion plate. Other filtration is field provided (recommended).

F. Coil:
1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain shall be provided under the coil.
6. The condensate shall be gravity drained from the fan coil.
7. The coil fins are coated with hydrophilic paint.
8. Optional Samsung condensate pump available (MDP-E075SEE3)
9. Both refrigerant lines to the AVXDSH***CE indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1 phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.

4.13 AVXDUH1**CE (MIDDLE STATIC PRESSURE CEILING-CONCEALED DUCTED) INDOOR UNIT

A. General:

The AVXDUH1**CE (Middle Profile) unit shall be a high-performance ceiling-concealed ducted indoor fan coil that mounts above the ceiling with a return and a fixed horizontal discharge supply and shall have a modulating linear expansion device. The AVXDUH1**CE shall be compatible with the MINI DVM (Heat Pump) outdoor unit. The AVXDUH1**CE shall support individual control using DVM Control Network Solution (Control systems). Indoor model numbers shall be AVXDUH100CE, AVXDUH110CE, AVXDUH145CE.

Each system shall perform in accordance to the ratings shown in the table below. Performance shall be based on nominal cooling conditions of 80°F DB, 67°F WB for the indoor unit and 95°F DB for the outdoor unit and nominal heating conditions of 70°F DB for the indoor unit and 47°F DB, 43°F WB for the outdoor unit.

System Model Number	Btu/h Cooling	Btu/h Heating
AVXDUH100CE	30,000	34,000
AVXDUH110CE	36,000	40,000
AVXDUH145CE	48,000	54,000

B. Indoor Unit.
The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air (Nitrogen Gas) before shipment from the factory.

C. Unit Cabinet:
1. The cabinet shall be space saving, ceiling-concealed ducted.
2. The cabinet shall be constructed of insulated galvanized steel.

D. Fan:
1. The indoor unit fan shall be an assembly with two Sirocco fans direct driven by a single motor.
2. Standard external static pressure is 0.31” WC. Acceptable range: 0.24” – 0.39” WC.
3. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
4. The indoor fan shall consist of three (3) speeds, High, Mid, and Low.
5. The indoor unit shall have a ducted air outlet system and ducted return air system.
6. The fan speed shall be adjustable by optional remote controller according to external static pressure.

E. Filter:
1. Return air shall be filtered by means of a standard factory installed return air filter.
2. Field provided filtration can be used within bounds of external pressure drop (recommended).

F. Coil:
1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan and drain shall be provided under the coil.
6. The coil fins are coated with hydrophilic paint.
7. Optional Samsung condensate pumps available (MDP-M075SGU1 for AVXDUH100/110CE models. MDP-M075SGU2 for AVXDUH145CE model).
8. The condensate shall be gravity drained from the fan coil.

9. Both refrigerant lines to the AVXDUH1**CE indoor units shall be insulated.

G. Electrical:
1. The unit electrical power shall be 208/230 volts, 1 phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

H. Controls:
1. This unit shall use controls provided by Samsung Electronics to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.

Part 5 – Controls

5.1 Overview

A. General:

The DVM Controls Network Solution shall be capable of supporting remote controllers, schedule timers, system controllers, centralized controllers, an integrated web based interface, graphical user workstation, and system integration to Building Management Systems via BACnet® and LonWorks®.

5.2 Electrical Characteristics

A. General:

The DVM Controls Solution shall operate at 12VDC. Controller power and communications shall be via a common communications bus. The Centralized Controller (MCM-A202B) is a 208/230VAC device.

B. Wiring:

1. Main system control wiring (COM1, F1/F2) shall be installed in a system daisy chain configuration from the indoor units to outdoor unit. Control wiring to wired remote controllers shall be run from the indoor unit terminal block to the controller associated with that unit.

2. Control wiring for system controllers and centralized controllers (upper level) shall be installed in a daisy chain configuration from interface module to interface module, to system controllers.

3. The MST-P3P (S-Net3 shall be capable of being networked with the MIM-D00A (DMS2), system controllers for web based control, and MST-S3W (S-Net mini) with MIM-D00A (DMS2), On/Off controllers for local zone control

C. Wiring type:

COM1 and COM2 control wiring shall be 2-conductor, 16 AWG, shielded cable.

Network wiring shall be CAT-5e with RJ-45 connection.

5.3 DVM Control Network Solution

The DVM Control Network Solution consists of remote controllers, system controllers, centralized controllers, and/or integrated web based interface communicating over a high-speed communication bus. The DVM Control Network Solution shall support operation monitoring, scheduling, error monitor, power distribution, personal browsers, tenant billing, online maintenance support, and integration with Building Management Systems (BMS) using either LonWorks® or BACnet® interfaces.

5.4 Individual Control System

A. Multi-Function Controller (MWR-WE10)

1. Connection:
   a. Can control up to 16 Samsung indoor units or ERV's (defined and controlled as one group).
2. Dimensions:
   a. The MWR-W10 shall be approximately 4 5/8" x 4 7/8" in size and white in color
3. Easy air handler and ERV control
   a. Air handler and ERV unified controller (can only control Samsung ERV's)
   b. Air handler operation ON/OFF
   c. Air handler operation mode, set temperature, air flow direction, fan speed
   d. Quiet and sleep modes
   e. Error display
   f. Filter replacement alarm display and reset
   g. Single indoor unit control or multiple unit control (maximum 16 units)
4. Energy saving operation
   a. Upper/lower temperature setting
   b. Automatic operation stop function
   c. Energy saving operation mode
5. Weekly operating schedule setting
   a. Weekly operating schedule (A/C only, ERV only, A/C + ERV)
   b. Able to set desired A/C operation mode, setting temperature and fan speed to operate based on weekly schedules
   c. Able to apply schedule exception day
6. Other features
   a. Different button permission levels
   b. Partial button lock option (on/off, selection, temperature setting, fan speed, and schedule setting buttons can be locked individually)
   c. Backlight
   d. Daylight savings clock advance option
   e. Temperature limit setting option
   f. Real-time clock function; current time/day display function
   g. Built-in room temperature sensor
   h. Indoor unit operation state display
   i. Service mode support (indoor unit cycle data monitoring, option code monitoring and setting, and dip switch state monitoring)

5. Specifications

a. Conductor connection
b. DC 12V (V1/V2) power supplied by indoor unit
c. RS485 communication (F3/F4)
d. Can sense temperature via internal sensor, temperature sensor inside the air handler, or use the average temperature between controller and air handler temperature sensors
e. MWR-WE10 has screw terminals for all wiring connections, no wire is included
f. 16AWG shielded cable is necessary for proper operation.

MWR-WE10 (Multi-Function Controller)			
Item	**Description**	**Operation**	**Display**
ON/OFF	Run and stop operation for a single group Include operating the ERV	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ Fan/Heat	Each Group	Each Group
Temperature Setting	Sets the temperature for a single group. Range of temperature setting Auto/Cool/Dry: 65°F-86°F Heat: 61°F-86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low/Auto	Each Group	Each Group
Air Flow Direction Setting	Air flow 2-step direction (Swing/Stop) Direct setting at a specific angle. Air flow operation varies depending on the model.	Each Group	Each Group
Weekly Scheduler	ON/OFF/Temperature setting can be done at most 10 schedules may be set for each day. Real-time clock function: current time, day display function	Each Group	Each Group
Button lock	Button permission level setting (On/Off / Temperature setting / Mode button / Fan speed) Temperature limit setting After power reset, the setting value is restored Various restriction capabilities	Each Group	Each Group
Specified Function	Automatic stop setting - Setting time range : 0-12 hours Energy saving operation mode - EHP+ERV or ERV operation only depending on outdoor temperature	Each Group	Each Group
Service Mode	Setting/Viewing the indoor unit option code Viewing the indoor unit RMC address Viewing the indoor unit cycle data Setting/Viewing temperature sensor compensation of the wired remote controller(-9°~ +9°) Viewing the RPM compensation Viewing the EEV step when the indoor unit is off during the heating mode Viewing the filter time (1000hours, 2000hours) Viewing indoor unit temperature sensor compensation under Heating (+2or +5°) Viewing the H/W option setting Viewing the wired remote controller software version	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Permit / Prohibit Local Operation	Setting/releasing of simplified locking for remote control buttons can be performed	Each Group	N/A
Quiet Mode	Select the Quiet mode to run the indoor unit to the set mode to lower the fan noise level.	Each Group	N/A
Room Temperature	Actual room temperature display for 5 seconds	Each Group	Each Group

*Some features may not be available depending on the model of connected air handler(s)

B. Standard Controller (MWR-WH00)

1. Connection
   The Standard Controller (MWR-WH00) shall be capable of controlling up to 16 indoor units (defined as 1 group).
2. Dimensions
   The MWR-WH00 shall be approximately 4.8” x 4.7” in size and white in color with a light-white LCD display.
3. Function
   a. Built-in temperature sensor
   b. The MWR-WH00 shall control the following grouped operations: On/Off, Operation Mode (auto, cool, heat, dry, and fan), temperature set point, fan speed setting, and airflow direction setting.
   c. The MWR-WH00 shall support an Auto ON/Off timer. The MWR-WH00 shall support temperature display selection of Fahrenheit or Celsius (Celsius requires additional system programming).
   d. The MWR-WH00 shall be able to limit the set temperature range and sensed at either the MWR-WH00 or the indoor unit dependent on the MWR-WH00 dipswitch setting. MWR-WH00 shall display a three-digit error code in the event of system abnormality/error.
   e. The MWR-WH00 shall only be used in the same group with other wireless remote controller (MR-BH01 / MR-CH01), or simple remote controllers (MWR-SH00) with up to two remote controllers per group.
   f. The MWR-WH00 shall require no addressing. The MWR-WH00 shall connect using four-wire (2 wires for power supply and the other two for communication), untwisted, non-polar control wire to the connection terminal on the indoor unit. The MWR-WH00 shall require cross-over wiring for grouping across indoor units.

MWR-WH00 (Standard Controller)			
Item	**Description**	**Operation**	**Display**
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ /Fan/Heat	Each Group	Each Group
Temperature Setting	Sets the temperature for a single group. Range of temperature setting Auto/Cool/Dry: 65°F-86°F Heat: 61°F-86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low/Auto	Each Group	Each Group
Air Flow Direction Setting	Air flow 2-step direction (Swing/Stop) Direct setting at a specific angle. Air flow operation varies depending on the model.	Each Group	Each Group
Button lock	Button permission level setting (On/Off / Temperature setting / Mode button / Fan speed) Temperature limit setting After power reset, the setting value is restored	Each Group	Each Group
Specified Function	Automatic stop setting - Setting time range : 0-12 hours Energy saving operation mode - EHP+ERV or ERV operation only depending on outdoor temperature	Each Group	Each Group
Service Mode	Setting/Viewing the indoor unit option code Viewing the indoor unit RMC address Viewing the indoor unit cycle data Setting/Viewing temperature sensor compensation of the wired remote controller(-9°~ +9°) Viewing the RPM compensation Viewing the EEV step when the indoor unit is off during the heating mode Viewing the filter time (1000hours, 2000hours) Viewing indoor unit temperature sensor compensation under Heating (+2or +5°) Viewing the H/W option setting Viewing the wired remote controller software version	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Permit / Prohibit Local Operation	Setting/releasing of simplified locking for remote control buttons can be performed	Each Group	N/A
Quiet Mode	Select the Quiet mode to run the indoor unit to the set mode to lower the fan noise level.	Each Group	N/A
Room Temperature	Actual room temperature display or set temperature display	Each Group	Each Group

C. Simple Wired Remote Controller (MWR-SH00)

1. Connection
   The Simple Wired Remote Controller (MWR-WH00) shall be capable of controlling up to 16 indoor units (defined as 1 group).
2. Dimensions
   The MWR- SH00 shall be approximately 2.7” x 4.7” in size and white in color with a LCD display.
3. Function
   a. The MWR-SH00 shall control the following grouped operations: On/Off, Operation Mode (auto, cool, heat, dry, and fan), temperature set point, and fan speed setting.
   b. The MWR-SH00 shall support temperature display selection of Fahrenheit or Celsius (Celsius requires additional system programming)
   c. The MWR-SH00 shall display a three-digit error code in the event of system abnormality/error.
   d. The MWR-SH00 shall only be used in the same group with other MWR-SH00 controllers, wireless remote controller (MR-BH01 / MR-CH01) with up to two remote controllers per group.
   e. The MWR-SH00 shall require no addressing. The MWR-SH00 shall connect using four-wire (two wires for power supply and the other two for communication), untwisted, 16 AWG, shielded control wire to the connection terminal on the indoor unit. The MWR-SH00 shall require cross-over wiring for grouping across indoor units.

MWR-SH00 (Simple Wired Remote Controller)			
Item	**Description**	**Operation**	**Display**
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ /Fan/Heat	Each Group	Each Group
Temperature Setting	Sets the temperature for a single group. Range of temperature setting Auto/Cool/Dry: 65°F-86°F Heat: 61°F-86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High/Mid/Low/Auto	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Operation mode lock	Operation setting to a specific mode (Cool, Heat. Auto)	Each Group	Each Group

D. Wireless Signal Receiver for Duct-type indoor units (MRK-A00)
1. Connection
a. The wireless signal receiver (MRK-A00) shall be capable of connection up to 1 Duct unit.
2. Dimensions
a. The MRK-A00 shall be approximately 2.7” x 4.7” in size and white in color with a LED display.
7. Function
a. The MRK-A00 shall control the On/Off operations
b. The MRK-A00 shall display an operation indication and blinking LED indication in the event of system abnormality/error.
c. The MRK-A00 shall connect using receiver wire (MRW-10A)

E. External remote room sensor (MRW-TA)
1. Connection
a. The external remote room sensor (MRW-TA) shall be capable of connection up to 1 indoor unit.
2. Function
a. The MRW-TA shall be used to measure the exact room temperature.
b. The MRW-TA shall support wire length of maximum 39 feet.

F. EXTERNAL CONTACT CONTROL – INDIVIDUAL UNIT ON/OFF CONTROL AND MONITORING (MIM-B14)
1. Control options to enable/disable and monitor individual indoor units
2. Direct indoor unit control by external contact, 0 volts signal
3. Emergency control with simple contact input
4. Indoor unit operation (thermo or operation)/error state output through relay contacts (5VDC)
5. Installation location: inside indoor unit
6. Connection to indoor units with included wire harnesses
7. Will not work with Neo Forte and Vivace wall mounted evaporators.

5.5 System Controllers
A. On/Off Controller (MCM-A202B)
1. Connection
a. The On/Off Controller (MCM-A202B) shall be capable of controlling up to 256 indoor units (defined as 16 groups).
2. Dimensions
The MCM-A202B shall be approximately 2.3” x 4.7” in size and white in color with 17 LED displays.
3. Function
a. The On/Off Controller (MCM-A202B) shall be capable of turning ON/OFF up to sixteen groups of indoor units, for a maximum of 256 indoor units.
b. All of the units, up to 256, shall be turned ON/OFF using the main switch.
c. An LED for each group of indoor units, up to 16 groups, shall be indicated if there is a failure within each group by flashing.

d. An All LED shall be ON if all the indoor units controlled by MCM-A202B are turned ON.
e. An LED for each group of indoor units shall indicate the ON/OFF status of the group.
f. The MCM-A202B shall be approximately 4.3” x 4.7” in size and shall be powered using the main AC power.

4. 208/230VAC 50/60 Hz. power.

MCM-A202B (On/Off Controller)			
Item	**Description**	**Operation**	**Display**
ON/OFF	Run and stop operation for the air conditioner units	Group or Collective	Group or Collective
Operation Mode Setting	Auto/Cooling/Heating mode control using dipswitch option	N/A	N/A
Temperature Setting	Not Available	N/A	N/A
Fan Speed Setting	Not Available	N/A	N/A
Air Flow Direction Setting	Not Available	N/A	N/A
Room Temp Display	Not Available	N/A	N/A
Error	LED flashes during failure.	N/A	Each Group
Schedule Operation	Not Available	N/A	N/A
Connection Position	Interface Module Communication Line (R1/R2, R3/R4, R5/R6)	N/A	N/A
Permit / Prohibit Local Operation	Wireless/wired remote control restriction	Each Group	N/A

5.6 Integrated Management System

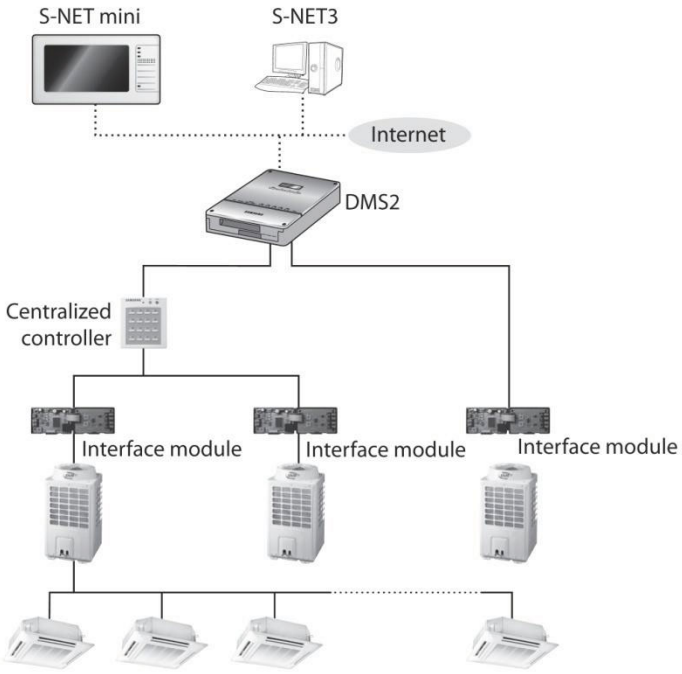
A. DMS2 (MIM-D00A)

1. Connection
   a. The DMS2 (MIM-D00A) shall be capable of controlling up to 256 indoor units (ERV, AHU).
2. Dimensions
   a. The MIM-D00A shall be approximately 9.4” x 10” x 2.6” in size with stainless steel front and LCD displays.
3. Function
   a. The MIM-D00A shall be capable of controlling a maximum of 256 indoors via a PC. A field supplied PC shall be required for the MIM-D00A Web-based Controller.
   b. The MIM-D00A shall support operation superseding that of the remote controllers,

system configuration, 1-day/daily/weekly scheduling, monitoring of operation status, error email notification, online maintenance tool and malfunction monitoring.

c. The MIM-D00A shall have basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 256 indoor units), or all indoor units (collective batch operation). This basic control set of operation controls for the MIM-D00A shall include on/off, operation mode selection (auto, cool, heat, dry, and fan), temperature setting, fan speed setting, airflow direction setting, error email notification, and online maintenance.
d. Since the MIM-D00A provides centralized control, it shall be able to enable or disable operation of local remote controllers via the PC.
e. Regarding scheduling, the MIM-D00A shall allow the user to define 1-day, daily, and annual schedules with operations consisting of ON/OFF, mode selection, temperature setting, permit/prohibit of wireless/wired remote controllers.
f. Available programmable logic to control the system based on preset monitor points.

MIM-D00A (DMS2)			
Item	**Description**	**Operation**	**Display**
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ /Fan/Heat	Each Group	Each Group
Temperature Setting	Sets the temperature for a single group. Range of temperature setting Auto/Cool/Dry: 65°F-86°F Heat: 61°F-86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low	Each Group	Each Group
Air Flow Direction Setting	Air flow 2-step direction (Swing/Stop) Direct setting at a specific angle. Air flow operation varies depending on the model.	Each Group	Each Group
Web Server Function	Remote control with the public IP address No management software required – PC-independent management	Each Group	Each Group
Accessible level / Dynamic user security Management	Wireless/wired remote controller restriction setting Specify the scope of control and monitoring unit on a per-user 3 accessible levels -Admin/Manager/User	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Schedule Operation	Up to 256 schedule settings Weekly and daily schedule setting	Each Group	Each Group
Power Distribution System	Power distribution to 256 indoor units. Remote data query in 1-day units File saving in Microsoft Excel format. Power distribution data storage for one year	Each Group	Each Group
External Contact Interface	Full indoor unit control with simple contact input (Emergency/Lock) State output (Operation/Error) for synchronous control 10 digital outputs (2 reserved) / 8 digital inputs (2 reserved)	Each Channel	Each Channel
Smart Central Management	Control & monitoring zone edition Wireless/wired remote control restriction Temperature limit setting Operation mode restriction	Each Group	Each Group
User editable control logic	User can edit control logic with arithmetic/conditional operators and parameters. Efficient energy saving realization for various operation conditions. EHP/ERV/AHU parameters + AND/OR + Arithmetic equation Function	Each Group	Each Group
Powerful data backup/ Useful history management	Important data is safely stored in SD memory card Record the operation history and error history	Each Group	Each Group



B. S-Net mini (MST-S3W)

1. Connection
   The S-Net mini (MST-S3W) shall be capable of controlling up to 256 indoor units.
2. Dimensions
   The MST-S3W shall be approximately 9” x 5.4” x 1.3” in size and white in color with a 7” LCD touch panel display.
3. Function
   a. The MST-S3W shall be capable of controlling a maximum of 256 indoor units across interface modules, DMS2’s or On/Off controllers.
   b. The MST-S3W shall be powered from an included power adapter.
   c. The MST-S3W shall support operation superseding that of the remote controllers, system configuration, daily/weekly scheduling, monitoring of operation status, and malfunction monitoring.
   d. The MST-S3W shall have five basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 256 indoor units), or all indoor units (collective batch operation).
   e. This basic control set of operation controls for the MST-S3W shall include on/off, operation mode selection (auto, cool, heat, dry, and fan), temperature setting, fan speed setting, and airflow direction setting. Since the MST-S3W provides centralized control it shall be able to enable or disable operation of local remote controllers.
   f. Regarding scheduling, the MST-S3W shall allow the user to define both daily and weekly schedules with operations consisting of ON/OFF, mode selection, temperature setting, and permit/prohibit of remote controllers.

MST-S3W (S-Net mini)			
Item	**Description**	**Operation**	**Display**
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches to Auto/Cool/Dry/Fan/Heat	Each Group	Each Group
Temperature Setting	Sets the temperature for a single group. Range of temperature setting Auto/Cool/Dry: 65°F-86°F Heat: 61°F-86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low	Each Group	Each Group
Air Flow Direction Setting	Air flow 2-step direction (Swing/Stop) Direct setting at a specific angle. Air flow operation varies depending on the model	Each Group	Each Group
Interface	USB keyboard supported 7-inch wide LCD restriction Touch screen	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Schedule Operation	Up to 256 schedule settings Weekly and daily schedule setting	Each Group	Each Group
External Contact Interface	Full indoor unit control with 2 simple contact inputs (Emergency/Lock)	Each Channel	Each Channel
Zone Management	Management structure customization regardless of installation structure Control zone creation/edition/deletion	Each Group	Each Group
Central restriction function	Upper/Lower temperature limit setting Operation mode lock (Cooling only, Heating only, Transition to Fan, No lock) Wireless/wired remote control lock (Prohibited/Allowed)	Each Group	Each Group

C. S-Net3 (MST-P3P)

1. Connection
   The S-Net3 (MST-P3P) shall be capable of controlling up to 4,096 indoor units (include ERV, AHU).
2. Dimensions
   The S-Net3 shall be system software installed by a CD.
3. Function
   a. The S-Net3 Integrated System Software shall enable the user to control multiple indoor units and shall provide additional functions.

b. The S-Net3 shall be capable of controlling up to 16 MIM-D00A DMS2's with a maximum of 4,096 indoor units across multiple outdoor units.
c. The S-Net3 software shall be required if the user wants to simultaneously control 16 MIM-D00As from a single PC using a single software session.
d. The S-Net3 shall support operation superseding that of the remote controllers, system configuration, daily/weekly/annual scheduling, monitoring of operation status, error email notification, online maintenance tool and malfunction monitoring.
e. The S-Net3 shall have basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 4,096 indoor units), or all indoor units (collective batch operation). This basic control set of operation controls for the S-Net3 shall include on/off, operation mode selection (cool, heat, auto, dry and fan), temperature setting, fan speed setting, airflow direction setting and online maintenance.
f. Since the S-Net3 provides centralized control, it shall be able to enable or disable operation of local remote controllers via the PC.
g. In terms of scheduling, the S-Net3 shall allow the user to define daily, weekly, and annual schedules with operations consisting of ON/OFF, mode selection, temperature setting, and permit/prohibit of remote controllers

MST-P3P (S-Net3)			
Item	**Description**	**Operation**	**Display**
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/Fan/Heat	Each Group	Each Group
Temperature Setting	Sets the temperature for a single group. Range of temperature setting Auto/Cool/Dry: 65°F-86°F Heat: 61°F-86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low	Each Group	Each Group
Air Flow Direction Setting	Air flow 2-step direction (Swing/Stop) Direct setting at a specific angle. Air flow operation varies depending on the model	Each Group	Each Group
Accessible level	Wireless/wired remote controller restriction setting Specify the scope of control and monitoring unit on a per-user	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Schedule Operation	Graphical schedule settings Weekly, Daily schedule control Exception date setting	Each Group	Each Group
Power Distribution System	Power distribution to 4,096 indoor units. Remote data query in 1-day units File saving in Microsoft Excel format. Power distribution data storage for one year in 1-day units.	Each Group	Each Group
Smart Central Management	Control & monitoring zone edition Wireless/wired remote control restriction Temperature limit setting Operation mode restriction	Each Group	Each Group

D. LonWorks® Gateway (MIM-B18)
   1. Function
      a. Easy Control & Monitoring Through Web Browser. Individual/Group control of up to 128 indoor units including Samsung ERV's and air handlers. Operation mode, temperature setting, airflow direction and fan speed. Restriction on use of wireless/wired remote controllers, mode, and temperature set point. ODU/IDU cycle monitoring. Convenient digital display allows for easy set up. SD memory card slot for data storage and software updating. LAN connection for upper level control options. Available sophisticated control logic allows programming outputs based on various system inputs.
      b. Web Server Function with remote control with a public IP address via internet connection. No management software required – PC-independent management

through web browser.

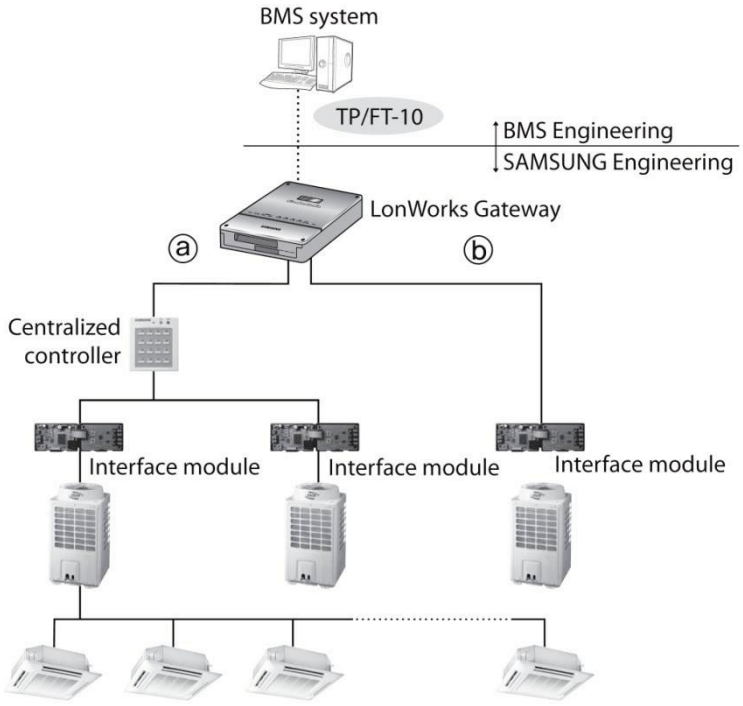
c. Schedule Control Function through web browser, up to 256 schedule settings, weekly and daily schedule setting, wireless/wired remote controller restriction setting. Digital Outputs can be incorporated into scheduling.
d. External Contact Interface
   Full indoor unit control with simple contact input (Emergency/Lock). 8 additional Digital Input terminals for monitoring options. State output (Operation/Error) for synchronous control. 6 general purpose outputs to control other components (on: 12VDC out; off: no voltage).

2. Connection
   a. DC 12V, 3A power provided by AC/DC adapter (input 110-240VAC 50/60Hz, provided with MIM-B18)
   b. Communication connection: Centralized Controller(s) (MCM-A202A/B, Interface Module(s) (MIM-B13B/D)
   c. 16AWG shielded cable between Samsung equipment and controls is necessary for proper operation
   d. Maximum number of RS485 connections:
   e. 16 Centralized Controllers to 1 MIM-B18, 80 Interface Modules connected direct (5 ports, 16 Interface Modules per port), 256 through Centralized Controllers, Maximum 256 indoor units (air handlers & ERV's) to one MIM-B18
   f. Digital inputs and outputs:
   g. Upper level device connections: S-NET Mini, S-NET 3, BMS system, web client
   h. MIM-B18 shall support LonWorks integration and provide functions to monitor and control status of Samsung DVM Plus II, MINI DVM Heat Pump, MINI DVM Heat Recovery, Mini DVM, Free Joint Multi, and CAC (CH070/105/140CAV, DH105/140CAV single zone systems).
   i. MIM-B18 has 5 RS485 channels to connect to Samsung equipment
   j. Interface Modules and Centralized Controllers cannot wire into the same channel
   k. Maximum 16 Centralized Controllers
   l. Maximum 80 Interface Modules directly connected, 128 with Centralized Controllers
   m. Maximum 128 indoor units/Samsung ERV's can be controlled by an MIM-B18 (this will vary based on the number of controllable items per unit, see table below)

   n. ERV's will require separate Interface Module than the air handlers for upper level controlling
   o. Maximum 64 indoor units per Interface Module
   p. Same dimensions and finish as MIM-D00A

Control and Monitoring Item	Max. Number of Connectable Indoor Units
27 Items (all)	22
20 Items	30
15 Items	40
12 Items	50
9 Items	64
6 Items	100
4 Items	128

20 items can be processed per second; data inquiry interval is 30 seconds.

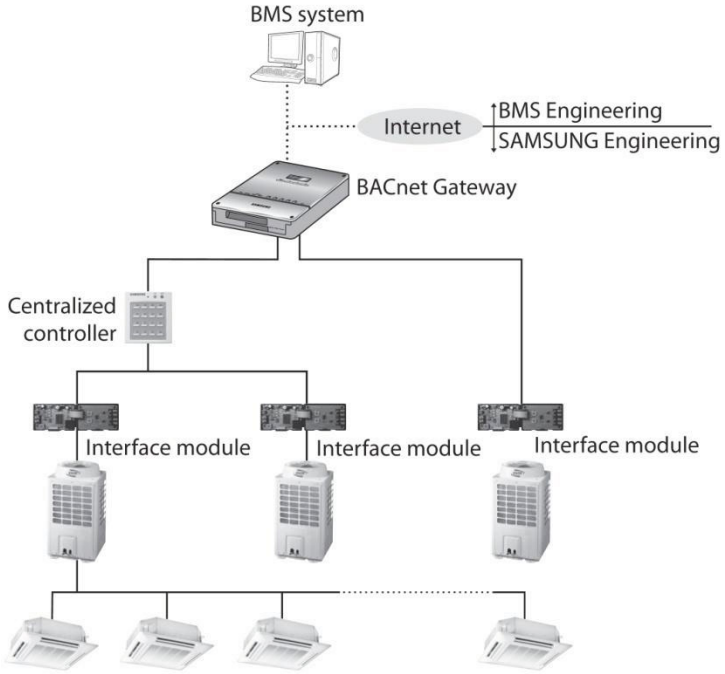


MIM-B18 (LonWorks® Gateway)		
Input Variables (Control)	**Output Variables(Monitor)**	
On/Off control	On/Off state	In/out contact state
Operation mode	Operation mode	Emergency Stop
Temperature setting	Set/Room temperature	Error code
Fan speed/direction	Fan speed/direction	
ERV operation mode	ERV operation mode	
ERV fan speed	ERV fan speed	
Filter alarm reset	Filter alarm	
User control restriction	User control restriction	
Operation mode lock	Thermo Off/On	
Set temperature limit	Power distribution	
Emergency stop	Operation mode lock	
Output contact control	Set temperature limit	

E. BACnet® Gateway (MIM-B17)
   1. Function
      a. Easy Control & Monitoring Through Web Browser. Individual/Group control of up to 256 indoor units (indoor quantity will vary based on number of control points necessary, see table below) including Samsung ERV's and air handlers. Operation mode, temperature setting, airflow direction and fan speed. Restriction on use of wireless/wired remote controllers, mode, and temperature set point. ODU/IDU cycle monitoring. Convenient digital display allows for easy set up. SD memory card slot for data storage and software updating. LAN connection for upper level control options. Available sophisticated control logic allows programming outputs based on various system inputs.
      b. Web Server Function with remote control with a public IP address via internet connection. No management software required – PC-independent management through web browser.
      c. Schedule Control Function through web browser, up to 256 schedule settings, weekly and daily schedule setting, wireless/wired remote controller restriction setting. Digital Outputs can be incorporated into scheduling.
      d. External Contact Interface
         Full indoor unit control with simple contact input (Emergency/Lock). 8 additional Digital Input terminals for monitoring options. State output (Operation/Error) for synchronous control. 6 general purpose outputs to control other components (on: 12VDC out; off: no voltage). Digital Inputs and Digital Outputs can be incorporated into control logic.
   2. Connection
      a. DC 12V, 3A power provided by AC/DC adapter (input 110-240VAC 50/60Hz, provided with MIM-B17)
      b. Communication connection: Centralized Controller(s) (MCM-A202A/B, Interface Module(s) (MIM-B13B/D)
      c. 16AWG shielded cable between Samsung equipment and controls is necessary for proper operation

d. Maximum number of RS485 connections:16 Centralized Controllers to 1 MIM-B17, 80 Interface Modules connected direct (5 ports, 16 Interface Modules per port), 256 through Centralized Controllers, Maximum 256 indoor units (air handlers & ERV's) to one MIM-B17
e. Digital inputs and outputs:
f. Upper level device connections : S-NET Mini, S-NET 3, BMS system, web client
g. MIM-B17 shall support BACnet/IP and provide functions to monitor and control status of Samsung DVM Plus II, MINI DVM Heat Pump, MINI DVM Heat Recovery, Mini DVM, Free Joint Multi, and CAC (CH070/105/140CAV, DH105/140CAV single zone systems).
h. Same dimensions and finish as MIM-D00A

MIM-B17 (BACnet® Gateway)		
Input Variables (Control)	**Output Variables(Monitor)**	
On/Off control	On/Off state	In/out contact state
Operation mode	Operation mode	Emergency Stop
Temperature setting	Set/Room temperature	Error code
Fan speed/direction	Fan speed/direction	
ERV operation mode	ERV operation mode	
ERV fan speed	ERV fan speed	
Filter alarm reset	Filter alarm	
User control restriction	User control restriction	
Operation mode lock	Thermo Off/On	
Set temperature limit	Power distribution	
Emergency stop	Operation mode lock	
Output contact control	Set temperature limit	



F. MIM-B13B – INTERFACE MODULE
   1. Function
      a. Communication device that interfaces indoor and outdoor units with external control system
      b. Used to connect DMS, DMS 2, Centralized Controller (up to 3 total), and S-NET Mini
      c. 1 MIM-B13B for each MINI DVM system (1-3 outdoor modules)
   2. Connection
      a. Dual power source - DC 12V and DC 5V for DVM Plus II and MINI DVM Heat Pump and MINI DVM Heat Recovery systems
      b. DC 12V power source for Free Joint Multi, CAC, and RAC
      c. RS485 communication (F1/F2) to outdoor unit with supplied connection wire
      d. RS485 communication (R1/R2, R3/R4, R5/R6) to Centralized Controller(s)
      e. RS485 communication (R1/R2) to DMS2
      f. Mounts in outdoor unit

G. MIM-B13D – INTERFACE MODULE
   1. Function
      a. Communication device that interfaces indoor and outdoor units with external control system
      b. Used to connect DMS, DMS 2, Centralized Controller, and S-NET Mini
   2. Connection
      a. 1 MIM-B13B for each MINI DVM system (1-3 outdoor modules)
   3. Specifications
      a. Single power source - DC 12V from outdoor unit with supplied connection wire
      b. RS485 communication (F1/F2) to outdoor unit with supplied connection wire
      c. RS485 communication (R1/R2) to Centralized Controller (MCM-A202B), DMS2 (MIM-D00A), S-NET Mini (MST-S3W).
      d. Mounts in outdoor unit with included wire ties and mounting case